FirstEnergy

SPDS

at the Davis-Besse Nuclear Power Station

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Overview

- FirstEnergy Corporation.
- Davis-Besse Nuclear Power Station.
- What is SPDS?
- Why, When and How SPDS was implemented at Davis-Besse.
- Configuration of SPDS.

Overview

- SPDS on the Plant Simulator.
- Real-Time Demonstration.
- Future Enhancements.
- Questions….

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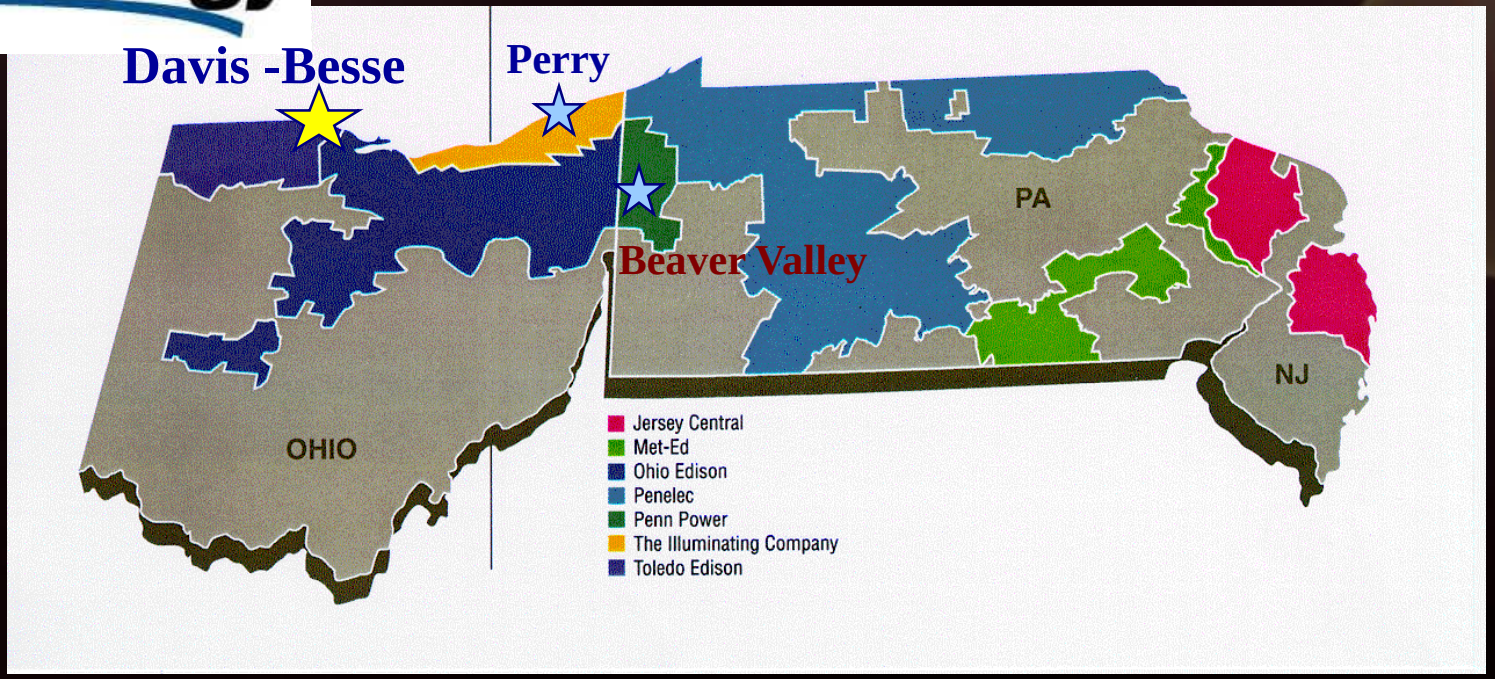


- Nation's fourth largest investor-owned electric utility.
- Services 4.3 million customers within 36,100 square miles of Ohio, Pennsylvania, and New Jersey.

Davis-Besse Nuclear Power Station

- Located in Oak Harbor, Ohio on the southwest shore of Lake Erie.
- 940 MW Pressurized Water Reactor
- Began Operation 1977.

Safety Parameter Display System (SPDS)

- Provides a display of plant parameters from which the safety status of operation may be assessed by the Control Room, Technical Support Center, and Emergency Control Center.
- Required for all nuclear plants after Three Mile Island incident in 1979 per NUREG 0696, NUREG 0737 and NUREG 0800.

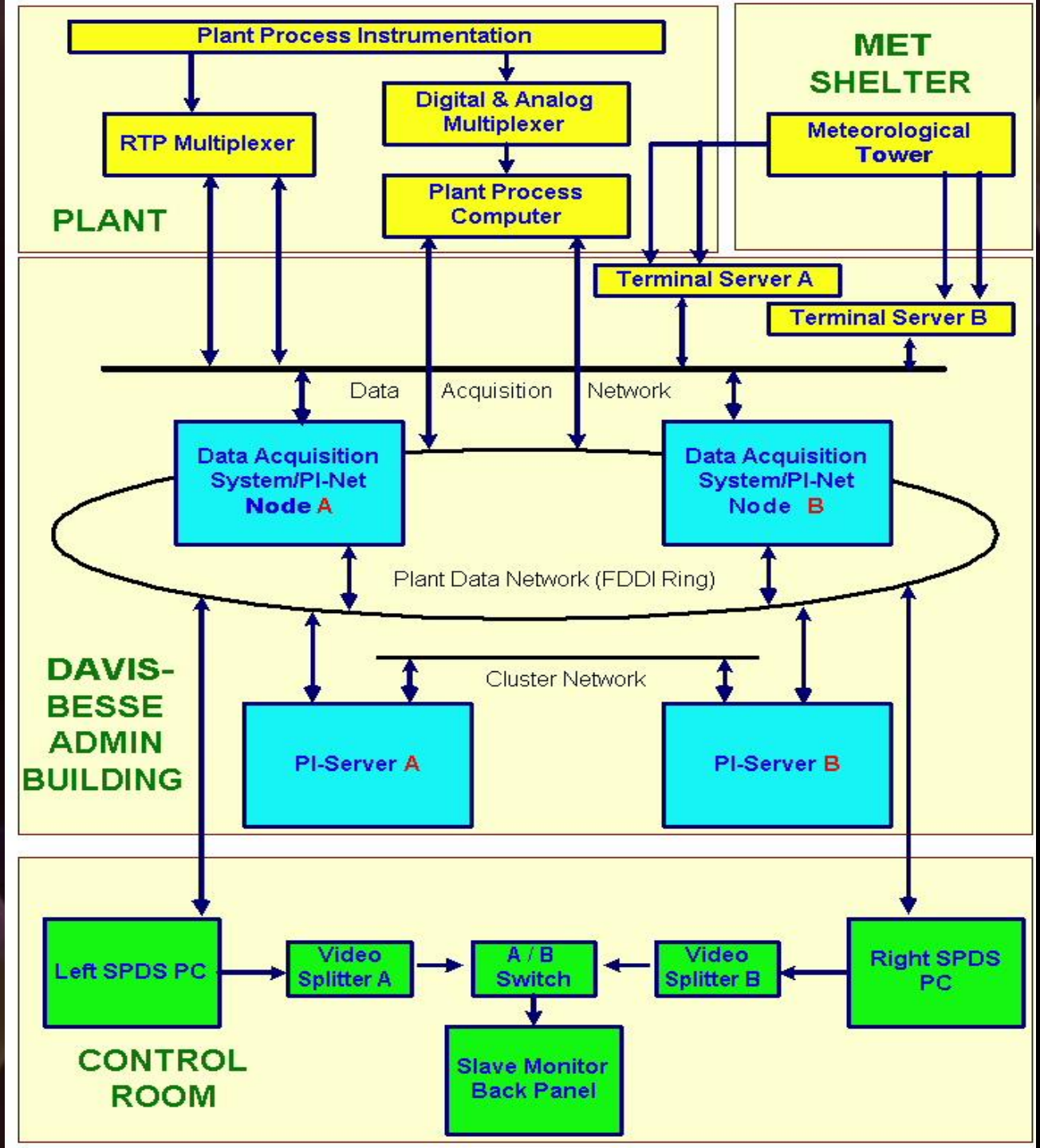
Validation and Verification

- For the original SPDS, the NRC required each plant to perform a V & V in accordance with NSAC-39 issued by the Electric Power Research Institute (EPRI).
- The following phases occurred to meet this requirement when implementing with PI.
  - System Requirements Review
  - System Design Review
  - System Validation Testing
  - System Installation Verification

SPDS at Davis-Besse

- Previous SPDS - VMS based, with IDT Graphics Terminals.
- PI was chosen for its' archival system and the ability to customize displays.
- The new SPDS have similar displays, and meet all commitments established with the previous SPDS.
- SPDS based on PI was implemented in March 2000.

S P D S


Plant Process Instrumentation
RTP Multiplexer
Digital & Analog Multiplexer
Plant Process Computer
PLANT
MET SHELTER
Meteorological Tower
Terminal Server A
Terminal Server B
Data Acquisition Network
Data Acquisition System/PI-Net Node A
Data Acquisition System/PI-Net Node B
Plant Data Network (FDDI Ring)
DAVIS-BESSE ADMIN BUILDING
Cluster Network
PI-Server A
PI-Server B
Left SPDS PC
Video Splitter A
A / B Switch
Video Splitter B
Right SPDS PC
Slave Monitor Back Panel
CONTROL ROOM

SPDS at Davis-Besse

- Windows NT Clients using PI-Processbook, PI-API, and Active X Controls.
- SPDS launches automatically upon login.
- Displays are locked into Full Screen Mode for the Control Room.
- SPDS PCs are located in the Control Room, Emergency Response Facilities, and Work Support Center.

SPDS at Davis-Besse

- One .piw book
- SPDS tab - contains 16 displays to meet NRC requirements.
- Six interactive alarm boxes on each SPDS display with 28 individual alarms.
- Additional 7 tabs containing 73 displays for increased information.
- 50,000+ lines of VBA code
- 149 Performance Equation tags

SPDS / PI on the Simulator

- Implemented on the Plant Simulator.
- Identical in the PI configuration to the real-time PI-Server and SPDS book.
- Used for testing of SPDS during initial implementation and for additional enhancements and modifications.
- Used for Emergency Response Drills.

Real-Time Demonstration

Future Enhancements

- Operational Schematic drawings with real-time values.
- Electrical Distribution drawings with real-time values.
- SPDS book available to everyone on-site using PI-ActiveView or PI-Processbook.

In Summary

- SPDS using PI was implemented using the same guidelines as the original SPDS.
- Used in the Plant and the Simulator.
- Uses PI-Processbook, PI-API and Active X Controls.
- Consists of one piw book with over 90 custom displays.

Questions...